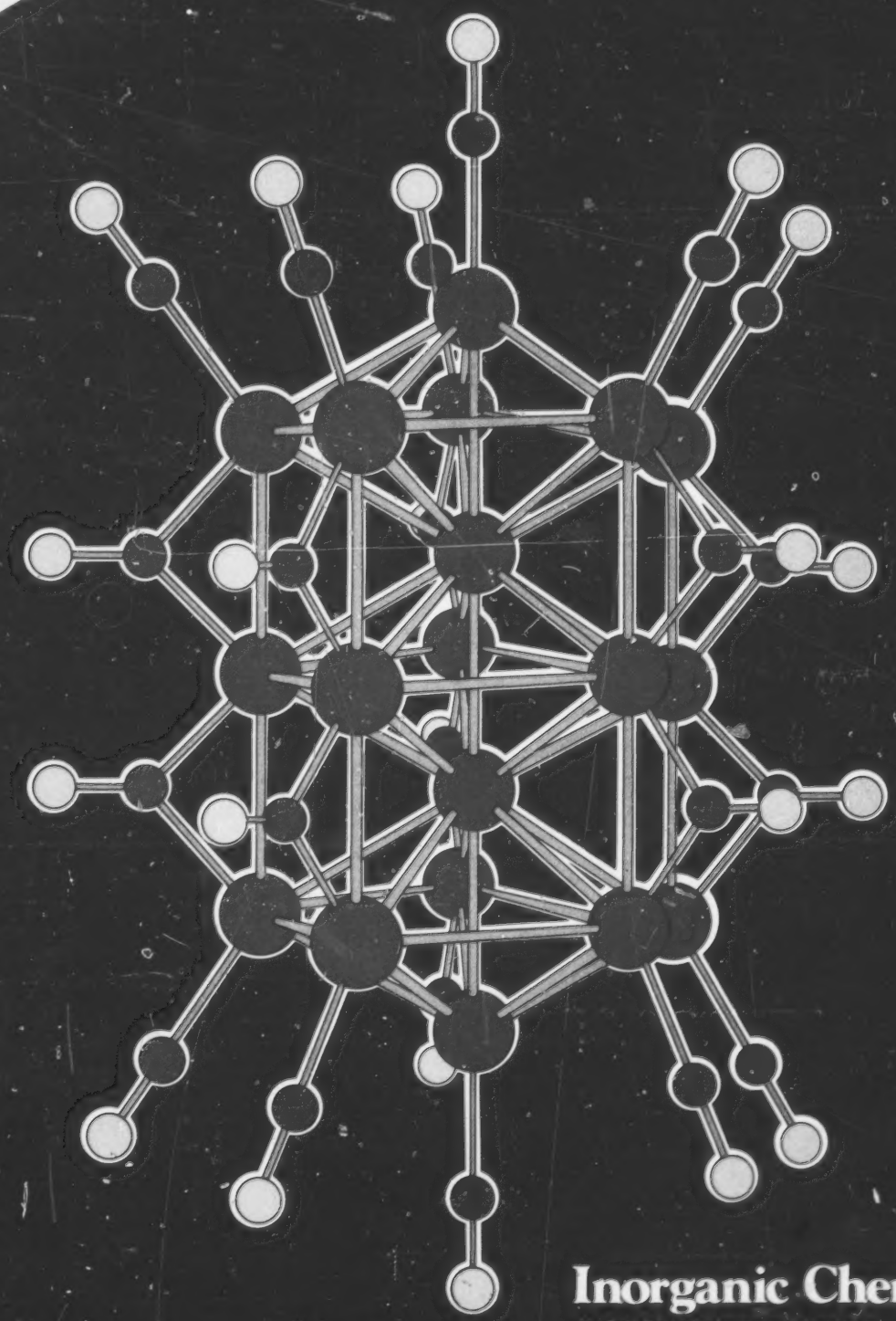
Chemical & Engineering NEWS

Chemical earnings rise substantially but profit margins level off Page 10



Inorganic Chemistry

A C&EN Science Update Page 30

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Chemical & Engineering NEWS

Cover: Metal cluster tetraanion, $[Pt_{15}(CO)_{12}(\mu\text{-}CO)_{10}]^{-4}$, in which platinum atoms are represented by magenta, carbon by blue, and oxygen by white

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News of the Week

- ***Overseas capital spending*** *by U.S. chemical companies will decline slightly in 1980 but funding will increase in developing areas such as the Middle East.* **Page 6**
- ***Chemical workers union*** *asks that production and use of Oryzalin herbicide be stopped, citing high incidence of birth defects among workers' children.* **Page 6**
- ***Nuclear Regulatory Commission*** *suspends licensing for operation or construction of nuclear power plants, aims to focus on improving reactor safety.* **Page 7**
- ***Study confirms earlier findings*** *that carbon dioxide is building up in the atmosphere through burning of fossil fuels, slash-and-burn agriculture.* **Page 7**
- ***Santa Fe International,*** *oil drilling and construction firm, will acquire California-based C. F. Braun, engineering and construction company.* **Page 8**
- ***Two big boosts in potash production*** *are under way: Potash Corp. of Saskatchewan will expand in Canada; Arab Potash Co. on the Dead Sea in Jordan.* **Page 8**
- ***γ -Substance,*** *a natural compound purified from human urine, binds to the same brain cell receptors as do the antianxiety drugs, Danish scientists find.* **Page 8**

Business

- ***U.S. chemical industry sales and earnings*** *continued strong in the third quarter although profit margins averaged only 6.1%; overseas business accounted for the strong showing of some firms.* **Page 10**

Government

- ***Proposed materials policy bill*** *nixed by the White House on grounds that objectives are being met, but Congressional sponsors favor more structured approach.* **Page 22**

Science

- ***The eye sees color*** *because the spectrum of the 11-cis-retinal molecule is changed by precisely located negative charges on amino acids of attached proteins.* **Page 25**
- ***Monomolecular organic compound*** *that can be π donor or acceptor developed; matrix classification scheme devised for π-molecular donor-acceptor complexes.* **Page 26**

Science Update

- ***Recent advances in inorganic chemistry*** *include new mechanism for olefin dimerization reactions based on metallacycle intermediate, insight into nitrogenase catalysis, research on amorphous materials.* **Page 30**

Education

- ***Problems of M.S. programs*** *in schools that do not grant the Ph.D. discussed at regional conference; association suggested to attack common concerns.* **Page 33**

ACS News

- ***Fostering innovation*** *must be national priority, ACS president Gardner Stacy tells federal hearing; gives society's patent law revision recommendations.* **Page 35**

Chemical profits extend large gains

Third quarter was another big one for U.S. chemical firms with earnings up 30%, sales 25%; profit margins, however, are flattening out

William J. Storck
and William F. Fallwell
C&EN, New York

The third quarter saw another big earnings increase for U.S. chemical companies, extending excellent gains for the year. This time, earnings were up an average 30% from the comparable quarter a year ago, and sales increased 25%. For the first three quarters, earnings rose 32% and sales increased 22%.

However, the latest earnings increase made it against an increasing drag. Holding earnings back, according to the companies, were a depressed automobile market, a downturn in synthetic fibers demand, and high raw materials costs. Counterbalancing were the generally high level of market activity and chemical plant use, good performance in petrochemicals and agricultural chemicals, and roaring business abroad.

Fortunately, for the third quarter, the pluses outweighed the minuses. But with a little shift the other way, earnings would have trailed sales' rate of increase, driving profit margins down.

As it is, the 6.1% average profit margin for the 40 largest basic chemical companies, although slightly ahead of last year's third quarter, is lower than it has been since fourth-quarter 1978.

Even more telling is the average profit margin of 5.8% chalked up by the 19 largest companies in C&EN's survey in the third quarter. This is the lowest reading for this group since the fourth quarter of 1977, when it was 5.4%. Thus, the industry's overall profitability is being kept up by smaller, more specialized firms.

These companies, ensconced in less diverse markets, include some with continuously lofty profit margins—International Flavors & Fragrances, Lubrizol, and Nalco Chemical.

However, other small companies are currently at dizzy cyclical peaks of profitability. Two of these, Texasgulf and Freeport Minerals, accounted for most of the smaller-company group's increase in profitability. Without these two companies, profit margins among the smaller firms would have averaged about 6.4% in the third quarter. This would have sent profitability for the entire list of 40 companies down to 5.9%, about the same as profitability was in third-quarter 1978.

During the third quarter, overseas business helped earnings a lot, just as it did in the second quarter. G. James Williams, financial vice president of Dow Chemical, says, "Business on a global basis has continued strong despite some slight evidence of a slackening in demand in the U.S." Williams says that for the first time in Dow's history, "non-U.S. sales are running more than 50% of the total for the company. Because of this geographic mix, any slowdown in the U.S. will be cushioned by expanding sales in other countries, both in production there and with exports from the U.S."

William H. Bricker, chief executive officer of Diamond Shamrock, also praises the foreign situation: "Specialty chemicals have performed well in the third quarter, particularly in Europe, where they have not only made up for the year's slow start, but are ahead of both expectations and 1978 performance to date."

However, other economic factors are beginning to undercut overall earnings gains. Raw material prices continued to squeeze producers during the third quarter. Edwin E. Tuttle, chairman and chief executive officer of Pennwalt, says, "We have not been able to raise prices to the same extent that our costs have risen. Total group earnings [before taxes and corporate expenses] therefore were

Chemical industry leaders for third-quarter 1979 . . .

Rank	Sales	$ Millions	Earnings	$ Millions[a]	Profitability	Earnings as % of sales
1	Du Pont	$3133.2	Du Pont	$234.0	Freeport Minerals	21.5%
2	Dow Chemical	2426.4	Dow Chemical	198.4	Texasgulf	16.7
3	Union Carbide	2325.7	Union Carbide	138.6	International Flavors	14.9
4	Monsanto	1496.7	Monsanto	82.1	Lubrizol	13.8
5	W. R. Grace	1278.6	W. R. Grace	57.3	Big Three Industries	12.1
6	Allied Chemical	1250.6	Hercules	41.4	Nalco Chemical	10.8
7	American Cyanamid	782.0	Diamond Shamrock	37.1	Dow Chemical	8.2
8	Celanese	778.0	Celanese	37.0	Mallinckrodt	7.8
9	Diamond Shamrock	606.0	American Cyanamid	35.7	Du Pont	7.5
10	Hercules	605.0	Texasgulf	31.9	Air Products	7.5

. . . and for first nine months of 1979

Rank	Sales	$ Millions	Earnings	$ Millions[a]	Profitability	Earnings as % of net sales
1	Du Pont	$9395.3	Du Pont	$707.7	Freeport Minerals	20.5%
2	Dow Chemical	6808.1	Dow Chemical	589.6	International Flavors	15.7
3	Union Carbide	6780.2	Union Carbide	413.7	Texasgulf	13.3
4	Monsanto	4647.3	Monsanto	303.4	Lubrizol	12.3
5	W. R. Grace	3781.1	W. R. Grace	153.3	Big Three Industries	12.1
6	Allied Chemical	3034.1	American Cyanamid	119.6	Nalco Chemical	11.1
7	Celanese	2332.0	Diamond Shamrock	119.6	Royster	10.9
8	American Cyanamid	2330.0	Hercules	117.7	Dow Chemical	8.7
9	Hercules	1749.0	Celanese	114.0	International Minerals	8.3
10	Diamond Shamrock	1700.0	Allied Chemical	108.2	Stauffer Chemical	8.3

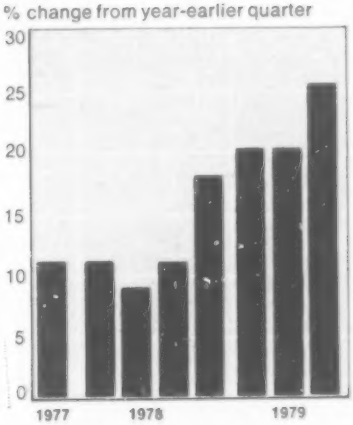
a After taxes. **Note:** For basic chemical companies with half or more of their sales in chemicals.

Chemical Industry 1979 Third Quarter

- Sales shot up another 25%
- Earnings gains slowed
- Profit margins dropped
- Production rose 6.1%
- Prices jumped 12.2%

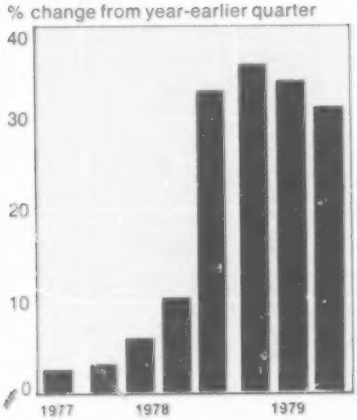
Sales

% change from year-earlier quarter



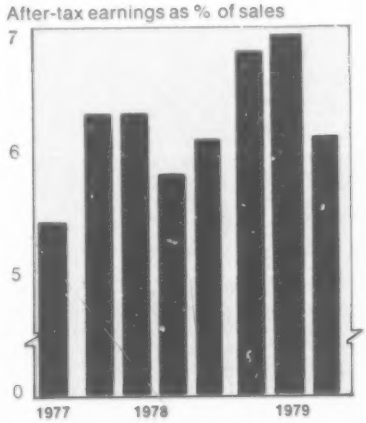
Earnings

% change from year-earlier quarter



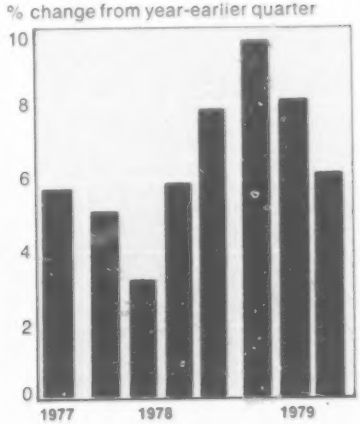
Profit margins

After-tax earnings as % of sales



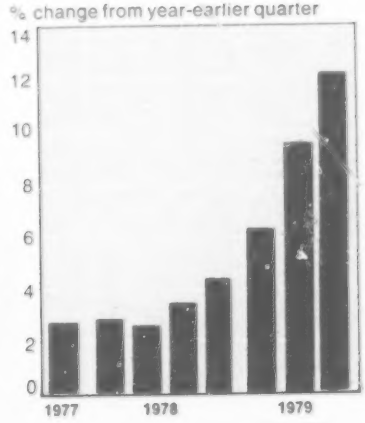
Production

% change from year-earlier quarter



Prices

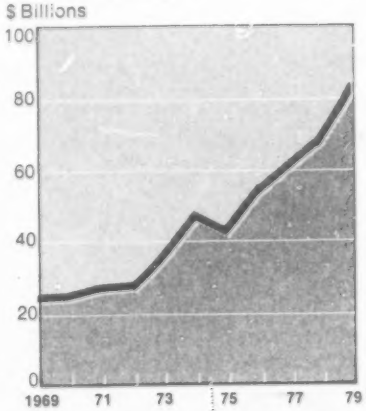
% change from year-earlier quarter



For the full year, momentum from the first nine months likely will carry sales to 22% increase; earnings are expected to be up 28%; profit margins likely will be 6.2%

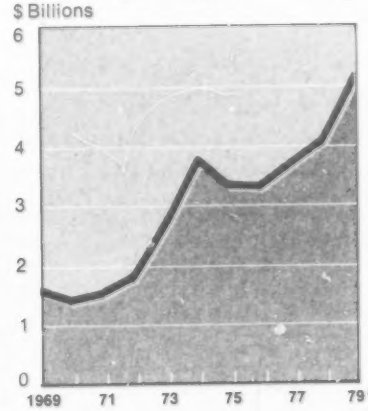
Annual sales

$ Billions



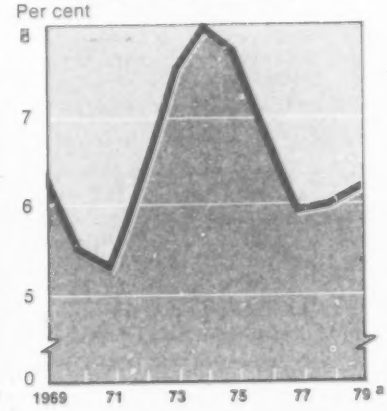
Annual earnings

$ Billions



Annual profit margins

Per cent



a C&EN estimates. **Note:** All sales, earnings, and profit margin data are based on the combined performance of the 40 largest basic chemical makers listed on page 12.

Third-quarter earnings were up 30% for chemical firms, but profit margins fell for most

	THIRD-QUARTER 1979						NINE-MONTHS 1979			
	Sales ($ million)	Earnings ($ million)	Change from 1978 Sales	Change from 1978 Earnings	Profit margin[a] 1979	Profit margin[a] 1978	Sales ($ millions)	Earnings ($ millions)	Change from 1978 Sales	Change from 1978 Earnings
Du Pont	$3,133.2	$234.0	17.9%	13.9%	7.5%	7.8%	$9,395.3	$707.7	18.9%	26.5%
Dow Chemical	2,426.4	198.4	44.9	29.3	8.2	9.2	6,808.1	589.6	34.3	35.0
Union Carbide	2,325.7	138.6	14.5	71.7	6.0	4.1	6,780.2	413.7	17.3	55.3
Monsanto	1,496.7	82.1	26.1	75.4	5.5	3.9	4,647.3	303.4	25.1	17.3
W. R. Grace	1,278.6	57.3	22.4	42.5	4.5	3.8	3,781.1	153.3	17.5	17.5
Allied Chemical	1,250.6	19.2	70.0	−42.9	1.5	4.6	3,034.1	108.2	35.6	−4.7
American Cyanamid	782.0	35.7	14.8	−1.0	4.6	5.3	2,330.0	119.6	14.2	6.8
Celanese	778.0	37.0	20.0	12.0	4.8	5.1	2,332.0	114.0	21.0	48.0
Diamond Shamrock[d]	606.0	37.1	32.3	25.0	5.3	6.5	1,700.0	119.6	30.8	29.0
Hercules	605.0	41.4	23.0	23.2	6.8	6.6	1,749.0	117.7	22.0	49.9
National Distillers	491.0	26.2	10.8	6.9	5.3	5.5	1,600.0	88.8	23.1	16.7
Williams Cos.	442.2	11.9	25.7	561.1	2.7	0.5	1,389.9	46.0	20.2	62.5
Ethyl Corp.	442.0	28.0	23.0	21.0	6.3	6.5	1,225.9	75.5	18.0	14.9
Olin	428.1	10.8	10.0	−41.0	2.5	4.7	1,337.1	55.6	16.1	15.6
Rohm & Haas	391.9	26.2	30.2	88.5	6.7	4.6	1,202.7	72.5	27.3	82.7
International Minerals	387.1	28.7	22.9	21.1	7.4	7.5	1,199.0	91.5	13.7	7.4
Air Products	347.8	26.2	26.4	33.7	7.5	7.1	954.3	75.6	19.3	29.7
Stauffer Chemical	312.5	11.0	15.7	−33.3	5.0	6.1	1,156.4	95.9	15.2	4.0
Cabot[e]	—	—	—	—	—	6.3	—	—	—	—
Pennwalt	266.6	11.5	17.7	12.7	4.3	4.5	796.0	38.1	15.5	10.4
Witco Chemical	247.5	10.8	24.4	20.0	4.4	4.5	705.6	32.6	30.3	36.4
Akzona	239.1	4.4	16.0	33.2	1.8	1.6	736.8	18.7	14.4	22.2
Reichhold Chemicals	221.3	1.3	15.6	−60.6	0.6	1.7	652.4	9.7	15.3	−17.8
Lubrizol	192.1	26.5	23.4	13.2	13.8	15.4	542.4	66.8	24.3	13.8
Texasgulf	191.3	31.9	21.7	149.2	16.7	8.1	739.9	98.5	33.2	128.0
Ferro	153.8	8.0	22.4	40.8	5.2	4.5	435.7	22.2	20.4	17.5
Thiokol	149.1	9.1	−1.1	50.4	6.1	4.0	478.9	26.5	19.8	55.9
Nalco Chemical	146.9	15.9	21.0	16.0	10.8	11.3	420.4	46.8	22.0	21.0
Big Three Industries	131.7	16.0	19.4	11.1	12.1	13.1	376.2	45.7	19.6	10.9
Freeport Minerals	129.5	27.8	76.9	291.5	21.5	9.7	357.4	73.4	60.5	314.7
International Flavors	103.7	15.5	14.6	9.9	14.9	15.6	317.2	49.9	13.5	13.4
Mallinckrodt	95.6	7.5	10.4	19.0	7.8	7.3	293.9	23.2	11.7	19.6
Liquid Air	94.7	6.4	26.6	33.3	6.8	6.4	270.4	18.4	17.9	18.7
Crompton & Knowles	55.7	1.5	2.4	7.1	2.7	2.6	178.9	4.6	12.2	17.9
Royster	47.2	1.0	98.3	f	2.1	f	220.4	24.0	40.2	485.5
Petrolite	45.1	2.6	6.8	−31.6	5.8	9.0	135.8	11.0	10.9	0.9
First Mississippi	44.1	2.3	51.5	f	5.2	f	150.8	9.3	31.4	220.1
Baker Industries[e]	—	—	—	—	—	f	—	—	—	—
Stepan Chemical	37.7	0.8	30.9	19.3	2.2	2.4	108.8	4.0	20.6	14.8
Virginia Chemicals	32.2	0.7	22.4	49.1	2.0	1.7	98.7	4.2	19.0	33.0
Total 19 largest companies[g]	**$18,191.4**	**$1061.3**	**25.9%**	**28.7%**	**5.8%**	**5.7%**	**$53,418.4**	**$3,386.3**	**21.8%**	**29.5%**
Total 19 other companies[g]	**$2,358.3**	**$190.0**	**21.0%**	**40.6%**	**8.1%**	**6.9%**	**$7,220.6**	**$589.5**	**24.8%**	**50.6%**
GRAND TOTAL[g]	**$20,549.7**	**$1251.3**	**25.3%**	**30.4%**	**6.1%**	**5.9%**	**$60,639.0**	**$3,975.8**	**22.1%**	**32.2%**

a After-tax income as percentage of net sales. b Fully diluted before nonrecurring items and extraordinary charges for continuing operations. c As of Oct. 31. d Includes nonrecurring

just barely ahead of a year ag spite of the 18% sales increase." After-tax earnings at Pennwalt increased 12% because of a lower effective tax rate, Tuttle says.

Hercules president Alexander F. Giacco says that during the third quarter, energy and raw material costs escalated rapidly and were substantially above those of the first half of the year.

The slowing in large-durables markets also pulled down earnings. Williams says that the only significant slowdown at Dow was in products associated with the auto industry, principally acrylonitrile-butadiene-styrene resins and polyurethane chemicals.

William S. Sneath, chairman and chief executive officer at Union Carbide, concurs. "Sales volume of certain product lines related to the automotive and steel industries began declining toward the end of the third quarter," he says.

John D. Macomber, president and chief executive officer of Celanese, points to additional weaknesses. "Sales of polyester textile filament and various plastics and specialty products were held back by declining consumer purchases of soft goods, automobiles, and housing." Macomber adds that these markets "plus a cost/price squeeze in polyester textile filament, led to the [10 cents a share] loss in the U.S. polyester/nylon business." Akzona's fibers division,

NINE-MONTHS 1979 Profit margin		Earnings per share[b]		STOCK MARKET DATA					
				Stock price[c]	Recent 12 months		Price/earnings ratio	Annual indicated dividend	Dividend yield, % of price
1979	1978	2nd qtr.	Recent 12 months	Oct. 31	High	Low	Oct. 31		
7.5%	7.1%	$1.62	$6.65	$38 3/4	$45 7/8	$37	5.8%	$2.00	5.2%
8.7	8.6	1.09	4.01	29 3/4	34 7/8	24 3/8	7.4	1.60	5.4
6.1	4.6	2.11	7.87	39 1/4	44 1/2	33 5/8	5.0	3.00	7.6
6.5	7.0	2.27	10.69	55 1/4	62	45	5.2	3.40	6.2
4.1	4.1	1.24	4.25	35 1/8	41 1/4	25 5/8	8.3	2.05	5.8
3.6	5.1	0.64	4.53	42 7/8	48 1/4	27 5/8	9.5	2.00	4.7
5.1	5.5	0.75	3.42	30	32 1/8	23 3/4	8.8	1.60	5.3
4.9	4.0	2.41	9.71	41 3/4	48 3/4	38 1/2	4.3	3.20	7.7
7.0	7.2	0.70	3.26	24 3/4	27 1/2	19	5.8	1.60	6.5
6.7	5.5	0.93	3.36	19 3/8	22 3/4	14 1/2	5.8	1.10	5.7
5.6	5.7	0.75	3.53	25 1/4	30 3/8	18	7.2	1.80	7.1
3.3	2.4	0.44	1.64	22	24 7/8	14	13.4	1.00	4.5
6.2	6.3	1.38	4.69	24 3/4	30	19 3/8	5.3	1.35	5.5
4.2	4.2	0.51	2.93	17 1/8	25	15 3/8	5.2	1.00	5.8
6.4	4.7	2.03	7.00	41 3/4	47 3/4	30 1/2	6.0	2.00	4.8
8.3	8.1	1.82	6.60	54 1/2	61 1/2	34	8.3	3.00	5.5
7.9	7.3	0.92	3.45	28 3/8	35 5/8	23 1/8	8.2	0.80	2.8
8.3	9.2	0.25	3.69	19 5/8	25	19	5.3	1.10	5.6
—	6.5	—	—	38 3/4	50	26 5/8	6.0	1.60	4.1
4.8	5.0	1.15	4.87	31 3/8	35 7/8	30 1/2	6.4	2.20	7.0
4.6	4.4	1.13	4.54	25 3/8	29 1/4	18 1/8	5.6	1.40	5.5
2.5	2.4	0.25	2.01	12 1/2	17 1/8	11 1/4	6.2	0.80	6.4
1.5	2.1	0.07	1.49	12	16 1/2	10 3/4	8.1	0.74	6.2
12.3	13.5	1.36	4.37	48 5/8	49 3/4	39 1/4	11.1	1.60	3.3
13.3	7.8	0.87	2.69	26	33	18	9.7	1.20	4.6
5.1	5.2	1.06	4.09	20 5/8	29 3/8	18 1/4	5.0	1.20	5.8
5.5	4.3	1.57	5.72	39 1/4	46	27 1/4	6.9	1.55	3.9
11.1	11.2	0.69	2.92	30 1/8	35 5/8	24 3/8	10.3	1.36	4.5
12.1	13.1	0.80	3.05	38 1/4	44 1/2	29 3/4	12.5	0.88	2.3
20.5	7.9	1.33	3.94	39 1/2	50 3/8	30	10.0	1.20	3.0
15.7	15.7	0.43	1.67	19 1/8	25 5/8	18 1/2	11.5	0.80	4.2
7.9	7.4	0.77	3.29	28 1/4	33 1/4	26 1/4	8.6	1.00	3.5
6.8	6.8	0.60	2.31	25 1/2	23 3/4	29	11.0	1.40	5.5
2.6	2.4	0.62	2.96	14 5/8	18 1/4	12 5/8	4.9	1.04	7.1
10.9	2.6	0.13	0.06	10	13 3/8	3 5/8	166.7	0.40	4.0
8.1	8.9	0.44	1.79	41	52 1/2	34	22.9	1.08	2.6
6.2	2.5	0.27	1.83	19 1/4	22 3/8	8	10.5	0.40	2.1
—	f	—	--	10	12 3/8	2 7/8	14.0	—	—
3.7	3.9	0.44	2.74	20 7/8	23 1/2	16	7.6	0.92	4.4
4.3	3.8	0.25	2.16	13	16 1/2	13	6.0	0.62	4.8
6.3%	6.0%								
8.2%	6.8%								
6.6%	6.1%								

items. e Not all data available by press time. f Deficit. g Averages except for sales and earnings.

American Enka, also lost money on normal operations.

Agricultural chemicals were a bright spot. J. Peter Grace, president of W. R. Grace, says, "Selling prices for phosphate-based fertilizers, and also for nitrogen products, are above year-ago levels and show signs of continued strength." The two most improved smaller firms, Texasgulf and Freeport Minerals, got much of their profits acceleration from phosphate fertilizers.

Agricultural chemicals also did well at most nonchemical companies with a stake in this area, one of the most important chemical investment targets from outside the basic chemical industry. For example, Esmark's Estech business segment, which contains the company's chemical business, got an earnings boost "from a strong agricultural environment with better-than-expected planted crop acreage and increased fertilizer application."

The same phosphate fertilizer boom that catapulted earnings at Freeport Minerals and Texasgulf figured strongly in chemical earnings at Occidental Petroleum. The oil company's Hooker Chemical division benefited from higher fertilizer prices and the income from its first year of large-scale superphosphoric acid exports to the Soviet Union.

However, Hooker had trouble in other parts of its largely inorganic product spectrum that drastically

Profit margins still rise for most chemical producers in the oil industry

	% chemical sales	3RD-QUARTER 1979 Sales[a] ($ millions)	Earnings[b] ($ millions)	Change from 1978 Sales	Change from 1978 Earnings	Profit margin[c] 1979	Profit margin[c] 1978	NINE-MONTHS 1979 Sales[a] ($ millions)	Earnings[b] ($ millions)	Change from 1978 Sales
OIL AND GAS COMPANIES										
Exxon[d]	8	$20,649.0	$1145.0	30%	118%	5.5%	3.3%	$59,055.0	$2930.0	26%
Mobil[d]	3	12,174.0	595.0	34	131	4.9	2.8	33,165.0	1436.0	24
Texaco	2	10,251.0	509.0	46	158	5.0	2.8	27,143.0	1149.6	30
Standard Oil of California	4	8,144.0	576.0	35	110	7.1	4.6	22,023.0	1335.0	24
Gulf Oil	9	6,736.0	416.0	33	97	6.2	4.2	18,410.0	956.0	26
Standard Oil (Ind.)	12	5,127.9	433.8	25	49	8.5	7.0	14,145.4	1184.1	17
Atlantic Richfield	9	4,378.7	320.4	28	45	7.3	6.5	11,627.1	822.9	23
Shell Oil	18	3,766.0	293.3	32	18	7.8	8.7	10,244.9	794.4	25
Continental Oil	6	3,500.0	214.5	41	103	6.1	4.4	9,300.0	592.1	32
Tenneco	9	2,806.0	132.0	33	28	4.7	4.9	7,989.0	411.0	27
Sun Co.	3	2,611.0	174.3	38	65	6.7	5.5	7,494.0	453.1	37
Occidental Petroleum	20	2,608.0	186.1	55	864	7.1	1.1	6,688.2	374.8	49
Phillips Petroleum	16	2,500.0	193.0	43	62	7.7	6.8	6,700.0	584.6	28
Union Oil	11	2,140.0	106.0	30	14	5.0	5.6	5,770.0	348.3	23
Standard Oil (Ohio)	6	2,100.0	366.2	62	191	17.4	9.7	5,600.0	735.1	52
Ashland Oil	15	1,940.0	53.0	13	−15	2.7	3.6	5,227.5	135.7	27
Cities Service	9	1,615.0	86.1	42	111	5.3	3.6	4,472.5	241.3	30
El Paso	10	836.0	38.5	62	60	4.6	4.6	2,187.8	110.4	51
Kerr-McGee	18	679.8	42.6	30	25	6.3	6.5	1,928.0	119.6	26
American Petrofina	14	427.8	27.8	43	467	6.5	1.6	1,129.7	55.4	34
DIVERSIFIED MANUFACTURERS										
General Electric	2	5,610.0	340.8	16	14	6.1	6.2	16,330.0	1026.3	15
Engelhard Minerals	2	4,234.3	105.3	59	185	2.5	1.4	10,898.7	211.9	71
U.S. Steel	7	3,225.0	81.3	16	−8	2.5	3.2	9,897.2	268.7	22
Procter & Gamble	3	2,663.9	185.7	17	11	7.0	7.3	7,458.3	469.0	14
Goodyear Tire & Rubber	11	2,021.9	29.2	7	−36	1.4	2.4	6,163.9	130.9	13
Eastman Kodak	20	1,995.7	285.8	14	20	14.3	13.6	5,441.2	706.1	16
Esmark	10	1,699.1	25.1	14	27	1.5	1.3	4,944.3	66.4	17
3M	15	1,422.0	174.3	16	14	12.3	12.5	4,073.0	488.0	17
Georgia-Pacific	8	1,385.0	85.0	15	9	6.1	6.5	3,836.0	257.0	19
Firestone Tire & Rubber	11	1,307.8	10.4	8	−35	0.8	1.3	3,865.4	77.8	10
Aluminum Co. of America	5	1,172.0	107.4	15	28	9.2	8.2	3,556.0	369.5	20
Borden	33	1,094.5	38.0	16	9	3.5	3.7	3,166.4	102.5	13
FMC	35	802.1	29.2	15	1	3.6	4.2	2,422.9	111.7	16
PPG Industries	32	784.3	56.3	11	23	7.2	6.5	2,290.0	163.8	11
B. F. Goodrich	36	742.9	16.2	15	6	2.2	2.4	2,212.9	67.1	16
Kaiser Aluminum	14	704.8	52.8	17	55	7.5	5.6	2,212.8	168.4	21
Pfizer	15	683.9	60.6	14	8	8.9	9.3	2,002.2	175.3	15
Northwest Industries	11	661.4	44.6	7	9	6.7	6.6	1,888.5	123.7	7
Borg-Warner	20	660.5	35.5	15	15	5.4	5.4	2,001.2	113.6	17
Merck	16	589.3	95.7	19	22	16.2	15.8	1,755.0	289.7	21
Uniroyal	19	563.0	−11.5	−12	f	f	f	2,001.4	−8.6	−1
General Tire & Rubber	10	554.1	20.8	−6	−29	3.8	5.0	1,675.6	66.2	7
NL Industries	30	531.1	30.7	13	38	5.8	4.7	1,610.7	77.4	17
Martin Marietta	12	530.4	54.1	16	21	10.2	9.8	1,491.4	140.7	19
Koppers	31	517.6	32.4	16	28	6.3	5.7	1,319.4	61.3	16

a Companies ranked by current quarter sales. b Before nonrecurring and extraordinary items for continuing operations, earnings per share fully diluted. c After-tax income as percentage of sales. d 1979 earnings include nonrecurring item. e Deficit in 1979. f Deficit.

NINE-MONTHS 1979			STOCK MARKET DATA							
Change from 1978 Earnings	Profit margin[c] 1979	1978	Earnings per share[d] 3rd qtr	Recent 12 months	Stock price Oct. 31	Recent 12 months High	Low	Price-earnings ratio Oct. 31	Annual indicated dividend	Dividend yield, % of price
53%	5.0%	4.1%	$2.60	$8.55	57 1/2	61 1/4	47 1/2	7	$4.40	7.7%
81	4.3	3.0	2.80	8.34	49 1/4	56	36 1/4	6	3.00	6.1
119	4.2	2.5	1.87	5.56	27 7/8	32 1/8	22 1/8	5	2.16	7.7
73	6.1	4.4	3.38	9.77	54 1/2	62 1/8	42 5/8	6	3.20	5.9
74	5.2	3.7	2.13	6.19	33 1/2	34 3/4	22 1/4	5	2.25	6.7
38	8.4	7.1	2.97	9.58	77	78 1/4	49 3/8	8	3.00	3.9
41	7.1	6.1	2.60	8.53	72 3/4	76 5/8	49 1/8	9	2.80	3.8
28	7.8	7.6	1.90	6.44	47 1/2	51 3/4	30 1/4	7	2.40	5.1
100	6.4	4.2	2.00	6.96	42 1/4	45 1/2	24 1/2	6	1.90	4.5
24	5.1	5.2	1.18	4.96	35 7/8	39 1/2	29	7	2.40	6.7
56	6.0	5.3	3.02	9.15	57 1/2	70 3/8	36 3/8	6	3.00	5.2
e	5.6	e	2.23	3.24	24	27 3/8	14 7/8	7	1.25	5.2
33	8.7	8.4	1.25	4.45	43	46 1/8	28 7/8	10	1.40	3.3
35	6.0	5.5	1.22	4.98	43	49 5/8	33	9	1.30	3.0
157	13.1	7.7	3.03	7.58	72 1/2	78 1/2	32 1/2	10	1.60	2.2
12	2.6	2.9	1.66	5.04	33 1/2	45 1/2	31	7	2.00	6.0
77	5.3	3.9	3.11	10.67	74 1/4	80 1/4	50 3/4	7	3.60	4.8
54	5.0	4.9	0.81	3.12	19 1/8	22 1/4	13 3/8	6	1.32	6.9
53	6.2	5.1	1.64	6.78	57 1/8	66 1/2	41 3/8	8	1.55	2.7
363	4.9	1.4	2.60	7.09	34 7/8	38 5/8	22 5/8	5	2.50	7.2
18	6.3	6.1	1.50	6.11	48 3/8	55 1/8	45 1/2	8	2.80	5.8
130	1.9	1.5	3.16	7.87	42 3/4	49 3/4	24 3/4	5	1.98	4.6
82	2.7	1.8	0.91	4.19	20 1/8	26 1/8	20 1/8	5	1.60	8.0
12	6.3	6.4	2.25	7.22	74 1/4	89 3/4	72 3/4	10	3.40	4.6
−15	2.1	2.8	1.80	2.67	12 3/4	18 7/8	12 3/4	5	1.30	10.2
24	13.0	12.1	1.78	6.43	49 7/8	66 7/8	49 1/4	8	2.40	4.8
17	1.4	1.3	1.20	4.27	27 5/8	32	23 3/8	6	1.84	6.7
17	12.0	12.0	1.48	5.51	50	66	48 1/8	9	2.40	4.8
13	6.7	7.0	0.79	3.16	24 3/4	30 3/8	24	8	1.20	4.8
50	2.0	1.5	0.18	1.70	8 5/8	13 7/8	8 5/8	5	0.60	7.0
74	10.4	7.2	3.04	12.44	52 3/8	60 1/2	43 5/8	4	2.80	5.3
0	3.2	3.7	1.17	4.19	25 3/8	28 1/8	24 5/8	6	1.82	7.2
8	4.6	5.0	0.81	4.52	24 5/8	[illegible] 1/2	22	5	1.40	5.7
25	7.2	6.4	1.74	6.65	30 3/4	34 1/4	23 1/8	5	2.00	6.5
38	3.1	2.6	0.95	5.26	18 1/8	24	16 1/8	3	1.44	7.9
51	7.6	6.1	1.20	4.67	18 3/4	22 1/8	16 3/8	4	1.20	6.4
14	8.8	8.8	0.83	3.22	34 1/2	36 1/4	29	11	1.32	3.8
13	6.6	6.2	1.45	5.51	32 5/8	37 7/8	23	6	2.05	6.3
19	5.7	5.6	1.65	7.09	32 7/8	37 1/4	26	5	2.30	7.0
23	16.5	16.2	1.27	4.79	66 1/8	71 5/8	53 3/4	14	1.90	2.9
f	f	0.1	−0.43	−0.25	4 1/4	8 1/4	3 7/8	f	0	0
−23	4.0	5.4	0.89	4.04	20	27	19	5	1.50	7.5
28	4.8	4.4	0.90	3.02	27 1/2	30 1/2	17 1/2	9	1.20	4.4
42	9.4	7.9	2.16	7.04	35 3/4	40 3/8	26 1/8	5	2.00	5.6
24	4.6	4.4	1.24	3.39	23 3/4	27 3/8	17 3/8	7	1.40	5.9

reduced the division's overall profit from third-quarter 1978. The biggest headache was chlorine and caustic soda, which the company says are still suffering from depressed prices and high energy costs.

However, other chlorine and caustic soda producers among both chemical and largely nonchemical companies note progress in the third quarter. PPG Industries, an important merchant seller, says demand was heavy. Diamond Shamrock calls the chlorine-caustic situation improved, and Pennwalt considers the market a turnaround.

Other inorganics drew mixed notices from the diversified company group. For example, FMC rates the third quarter good for natural soda ash and hydrogen peroxide. However, the company's long-running problems in phosphorus continued, with temporary shutdown of a major plant in Idaho after a power shortage caused by apparent sabotage of a large generator station.

In the organics sphere, the third-quarter star among nonchemical companies was petrochemicals in the oil industry. After-tax petrochemical profits more than doubled, on average, for leading companies (C&EN, Oct. 29, page 6) on only moderate physical volume increases. Prices were way up in both olefins and aromatics, and plant use was very high. In an extreme example, Gulf Oil's sales poundage of chemicals dropped 3% in the third quarter from a year earlier but its chemical profits jumped fivefold. The profit columns also got a major boost from Gulf's plastics. Plastics helped other oil companies, too.

Plastics were critical for profits in two other nonchemical industries, steel and rubber, both of which are trapped in a recessionary earnings drop in their principal markets. At U.S. Steel, chemicals made the best general improvement of any major operation and helped counterbalance the deficit in the company's steel operations.

Even more important were plastics' earnings, especially from polyvinyl chloride, at rubber companies. In fact, it's not an exaggeration to say that rubber companies' financial health in the third quarter depended on how much plastics and chemicals they had. At the most buffered company, B. F. Goodrich, chemicals dominated third-quarter earnings and allowed the company to post a small increase from third-quarter 1978.

However, at Goodyear and Firestone, which have proportionately less chemicals in their sales, earnings fell sharply this year. And at Uniroyal, even record chemical earnings could not save the company from another overall earnings loss caused by weak tire operations.

From here on, chemicals may not be able to save rubber and other company earnings as they did in the third quarter. Goodrich chairman John D. Ong says, "We expect that conditions will continue to deteriorate in the fourth quarter for our tire business. This will adversely affect the synthetic rubber operations in our chemical group. High interest rates will affect construction industry activity which may, in turn, reduce demand for that portion of polyvinyl chloride associated with new construction. Finally, despite evidence of a slowdown in the economy, we continue to experience rising costs for raw materials, energy, and labor."

Among basic chemical company executives, the outlook for the fourth quarter is cautious to optimistic. H. Barclay Morley, chairman of Stauffer Chemical, says that, assuming no significant decline results from general weakening in the economy, the outlook for the fourth quarter remains favorable for Stauffer, based on strong international business.

Claude Ramsey, president and chairman of Akzona, takes a middle road. Ramsey says, "The expected slowing of the economy has not yet had much impact on the various business areas [of Akzona], except in the case of American Enka, where it has been difficult to pass along cost increases." Concerning the fourth quarter, Ramsey says, "The general economy is so unsettled now that the outlook for the balance of the year is unclear."

Irving S. Shapiro, chairman of Du Pont, says, "Sharp increases in material and energy costs and softening in some areas of the U.S. economy makes it increasingly difficult to maintain the company's progress toward adequate profit levels. Nevertheless, Du Pont's performance during the first three quarters of the year showed good improvement over last year, and full-year results should reach an acceptable level, [barring] a sharp, sudden downturn in the economy."

Dow's Williams says that the company remains "confident that 1979 will be a good year. Sales should be approximately $9 billion and earnings for the year will exceed 1978's by at least 25%."

Diamond Shamrock's Bricker says, "Our previously announced 1979 earnings target now appears to be conservative. An earnings target of $175 million to $180 million appears to be attainable from operations, rather than the $170 million formerly estimated." □

CHECKOFF

NEW PLANTS

■ **Acrylonitrile**—Vistron subsidiary of Standard Oil (Ohio) plans 400 million lb-per-year plant costing more than $100 million at its new Green Lake, Tex., site. To be completed at end of 1981, unit will use Sohio's own technology. C-E Lummus subsidiary of Combustion Engineering will do the engineering, procurement, and construction supervision.

■ **Butynediol**—GAF plans $15 million plant of unspecified capacity at Seadrift, Tex., for this intermediate for butanediol. Completion scheduled for early 1981.

■ **Detergent alkylate**—Witco Chemical plans second unit at Carson, Calif., which will double capacity to 90 million lb a year. To cost $12 million, new unit will be part of larger expansion of alkylate-related facilities to be completed in early 1981.

■ **Ethyleneamines** — Dow Chemical plans to expand capacity at Freeport, Tex., from current 60 million lb per year to 100 million lb. Completion scheduled for 1982. This project is part of larger campaign to bring worldwide capacity to 160 million lb in 1982.

■ **MDI**—BASF Wyandotte has started construction on plant in Geismar, La., to make 150 million lb a year of diphenyl methane diisocyanate (MDI). Completion is scheduled for late 1981. C-E Lummus will do engineering for plant, which will use technology from parent BASF.

■ **Organotin**—M&T Chemicals plans plant near Mobile, Ala., with capacity of 10 million to 15 million lb a year of tetrabutyl and tetraoctyl tin. Target startup date is July 1981. Products are intermediates used to make other organotin compounds.

■ **Sodium sulfite**—Allied Chemical is expanding capacity at North Claymont, Del., from current 20,000 tons per year to 30,000 tons for technical-grade product. Completion scheduled by end of 1979. Expansion will use Allied's own technology.